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10/524,294	02/11/2005	Mitsuhiro Yuasa	101249.55938US	6396

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EXAMINER	
HESS, MICHAEL THOMAS	
ART UNIT	**PAPER NUMBER**
3729	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

ED

Office Action Summary	Application No.	Applicant(s)	
	10/524,294	YUASA, MITSUHIRO	
	Examiner	Art Unit	
	Michael T. Hess	3729	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 July 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *3-8* is/are pending in the application.

4a) Of the above claim(s) *5-8* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *3 and 4* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *07/26/2007* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 4 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

3. The term "previously" in claim 4 is a relative term which renders the claim indefinite. The term "previously" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. The term "previously" creates ambiguity because it is not in reference to a time period. For example, it is unclear if the MEMS circuit is formed in the substrate prior to the first step of Applicant's claimed invention or if it only needs to be formed prior to the last step of Applicant's invention. Therefore, Applicant has failed to particularly point out and distinctly claim the subject matter which Applicant regards as the invention.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,640,429 to Sasaki (Sasaki).

In Reference to Claims 3 and 4

Sasaki teaches:

A method for fabricating an electrical device, comprising the steps of:

forming a first conductive (Fig. 3(a), Ref. #22) film on a semiconductor substrate (substrates consists of Ref. #s 21, 10; Col. 1, Lines 19-29, a semiconductor device is mounted in a circuit board, thus the circuit board and its components are the semiconductor substrate);

forming on said first conductive film a second dielectric film (Fig. 3(a), Ref. #24) whose dielectric constant is larger than that of a first dielectric film (Col. 4, Lines 24-26);

etching said second dielectric film (Ref. # 24) to form a transmission line (Col. 4, Lines 33-34);

embedding said first dielectric film (Fig. 3(c), Ref. #11) in an area where said second dielectric film has been etched away (Col. 4, Lines 31-45, discussing etching away layer 24 and forming insulating layer 11); and

forming a second conductive film on said first dielectric film and said second dielectric film (Fig. 3(f), Ref. #26);

wherein said substrate (Ref. #s 21, 10) includes a Micro-Electro-Mechanical System (MEMS) (Fig. 1, Ref. # 19) circuit previously formed therein.

Sasaki fails to teach the exact type of final product, i.e. forming a nonradiative dielectric waveguide.

However, It would have been obvious to one having ordinary skill in the art at the time the invention was made to have used the method of making a capacitor in a substrate as disclosed in Sasaki to form a nonradiative dielectric (NRD) waveguide. It is well known by one having skill in the art that NRD waveguides can be constructed from the conductive and/or dielectric materials that are used in Sasaki's method. Because Sasaki's products have the same general structure of dielectric material between two conductors and can be used for transferring both power and communication signals as a NRD waveguide, it would have been obvious to use a semiconductor fabrication process as in Sasaki to fabricate a NRD waveguide.

Claim Rejections – 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 3,563,630 to Anderson et al. (Anderson) in view of U.S. Patent No. 4,463,330 to Yoneyama (Yoneyama).

In Reference to Claim 3

Anderson teaches:

A method for fabricating a dielectric waveguide, comprising the steps of:

forming a first conductive (Ref. # 32 or 42) film on a semiconductor substrate (Ref. # 31 or 41, Col. 6, Line 57, quartz or silicon is used for the substrate; Col. 6, Lines 59-66, discussing making the metal-dielectric-metal waveguides with the same general process as was used in Fig. 1; Col. 6, Lines 62-63, deposition of gold on substrate);

forming on said first conductive film (Ref. # 32 or 42) a second dielectric film (Ref. # 33 or 43; Col. 4, Lines 69-73, deposition of dielectric material);

etching said second dielectric film (Ref. # 32 or 42) to form a transmission line (Ref. # 33, Fig. 5 or 6, Col. 5, Lines 23-27);

forming a second conductive film (Ref. # 34 or 44) on said second dielectric film (Ref. # 33 or 43)

However, Anderson fails to teach:

embedding a first dielectric film, having a dielectric constant is smaller than that of the second dielectric film (Col. 4, Lines 24-26) in an area where said second dielectric film has been etched away in order to form a nonradiative dielectric waveguide.

Yoneyama teaches:

embedding a first dielectric film (Ref. # 5), having a dielectric constant is smaller than that of the second dielectric film (Col. 2, Lines 28-29) in an area where said second dielectric film is not and between the two conductive layers (Fig. 1B) in order to form a nonradiative dielectric waveguide (Col. 3, Lines 1-2).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have added a dielectric material having a smaller dielectric constant than that of a first dielectric layer as in Yoneyama to the method of manufacturing a waveguide of Anderson in order to form a nonradiative dielectric waveguide as explicitly taught by Yoneyama.

3. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Anderson and Yoneyama as applied to claim 3 above, and further in view of U.S. Patent No. 6,611,237 to Smith (Smith).

In Reference to Claim 4

Anderson and Yoneyama teach:

a method for fabricating a nonradiative dielectric waveguide as claimed in claim 3 (see 35 U.S.C. § 103(a) rejection of Claim 3 above).

However, Anderson and Yoneyama fail to teach:

wherein said substrate includes a Micro-Electro-Mechanical System (MEMS) circuit previously formed therein.

Smith teaches:

wherein a MEMS circuit (Cols. 3-4, Lines 53-10, discussing making a mirco-switch through a MEMS process) is fabricated into said substrate (Cols. 2-3, lines 64-1, discussing the integration of electronic devices directly into substrates) in order to reduce material used, reduce costs and increase performance (Col. 2, Lines 61-67).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have included the step of fabricating a MEMS circuit into the

substrate as in Smith in the method for fabricating a nonradiative dielectric waveguide of Anderson and Yoneyama in order to increase performance and reduce production costs of nonradiative waveguides.

Response to Arguments

4. Applicant's arguments, see Remarks, filed July 26, 2007, with respect to the Drawing Objections, Specification Objections, Claim Objections, 35 U.S.C. § 112 Rejections and the 35 U.S.C. § 102(b) rejection in view of Yoneyama have been fully considered and are persuasive. These objections and rejection have been withdrawn.

5. Applicant's arguments, see Remarks, filed July 26, 2007, with respect to the 35 U.S.C. 102(e) regarding and 35 U.S.C. § 103(a) rejections in view of Applicants' amendments have been fully considered but they are not persuasive.

6. Applicants argue that Sasaki fails to disclose a "semiconductor substrate" as amended claim 3 recites. However, the mere "semiconductor substrate" does not necessarily mean that the substrate is made of a semiconductor material because claims 3-4 do not require a specific semiconductor material, i.e. silicon, to be the material that makes up the substrate. On the other hand, Sasaki's substrate is used for mounting semiconductor devices thereon and thus is considered as the semiconductor substrate. As noted above, the semiconductor substrate is represented by Ref. #s 21, 10 and Col. 1, Lines 19-29, which discusses that a semiconductor device is mounted in a circuit board, thus the circuit board and its components are the semiconductor substrate.

7. In addition, Applicants argue that Sasaki fails to disclose the process is used to create a nonradiative dielectric waveguide. However, the 35 U.S.C. § 103(a) rejection using Sasaki remedies this supposed deficiency. As noted above, it would have been obvious to one having ordinary skill in the art to use the capacitor manufacturing process of Sasaki to produce a nonradiative dielectric waveguide because they have the same general structures and function in a similar manner, directing signals.

8. Therefore, Applicant's arguments with respect to claims 3 and 4 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

9. Because Examiner's rejections is maintained and Applicant's amendment necessitated a new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael T. Hess whose telephone number is 571-270-1994. The examiner can normally be reached on 6:30 AM - 5:00 PM, Monday - Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter Vo can be reached on 571-272-4690. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MTH/MTH 8.27.07

PETER VO
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